

CLAIMS

What is claimed is:

1. A method of load balancing traffic with path tagging in a switching mesh,  
5 the method comprising:  
receiving a packet at a switch of the mesh;  
getting a MAC destination address from the packet;  
finding an entry in a MAC address table with the MAC destination  
address;  
10 obtaining a switch identifier associated with the MAC destination address;  
finding an entry in a switch table with the switch identifier;  
obtaining data associated with the switch identifier;  
using a hash function on field data from the packet to generate a hash  
value;  
15 using the hash value and the associated data to generate an index value;  
finding an entry in the tag table with that index value;  
obtaining a path tag associated with the index value; and  
inserting the path tag into the packet.
- 20 2. The method of claim 1, wherein the packet is received on a non-mesh  
port of the switch.
3. The method of claim 2, wherein the packet includes a unicast MAC  
destination address that is found in the MAC address table.
- 25 4. The method of claim 1, wherein the hash function depends on a MAC  
source address and a MAC destination address of the packet.
5. The method of claim 4, wherein the hash function further depends on an  
30 IP source address and an IP destination address of the packet.
6. The method of claim 5, wherein the hash function depends on TCP/UDP  
port numbers.

7. The method of claim 1, wherein the associated data includes a start index and a total number of tags associated with the switch identifier.
- 5 8. The method of claim 7, wherein the index value is generated by dividing the hash value by the total number of tags associated with the switch identifier and then adding the start index.
9. The method of claim 1, further comprising:  
10 obtaining a port number associated with the index value in the tag table;  
and  
transmitting the packet from that port number.
10. The method of claim 1, wherein the path tags are weighted.
- 15 11. The method of claim 10, wherein weighting is accomplished by including a variable number of a same path tag in the tag table, wherein a greater number of the same path tag corresponds to a greater weight for that tag.
- 20 12. A method of load balancing traffic with path tagging in a switching mesh, the method comprising:  
receiving a packet at a switch of the mesh;  
getting a MAC destination address from the packet;  
finding an entry in a MAC address table with the MAC destination  
25 address;  
obtaining both a switch identifier and a priority associated with the MAC destination address;  
finding an entry in a switch table with both the switch identifier and the  
priority;  
30 obtaining data associated with both the switch identifier and the priority;  
using a hash function on field data from the packet to generate a hash value;  
using the hash value and the associated data to generate an index value;

finding an entry in the tag table with that index value;  
obtaining a path tag associated with the index value; and  
inserting the path tag into the packet.

- 5     13.     The method of claim 12, wherein the associated data includes a start  
         index and a total number of tags associated with the switch identifier.
14.     The method of claim 13, wherein the index value is generated by dividing  
         the hash value by the total number of tags associated with the switch  
10          identifier and then adding the start index.
15.     The method of claim 12, further comprising:  
         obtaining a port number associated with the index value in the tag table;  
         and  
15          transmitting the packet from that port number.
16.     A switching apparatus configured to be a member of a switching mesh,  
         the apparatus comprising:  
         a plurality of ports; and  
20          a switch control device coupled to the plurality of ports,  
         wherein the switch control device is configured to load balance packetized  
         traffic with path tagging.
17.     The apparatus of claim 16, further comprising:  
25          a layer 2 MAC address table;  
         a switch table; and  
         a tag table,  
         wherein each said table is configured to be accessed by the switch control  
         device.  
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18.     The apparatus of claim 17, further comprising a hash algorithm for  
         generating an index into the tag table.

19. The apparatus of claim 18, wherein a switch identifier is obtained from the MAC address table, and wherein both a start index and a total number of tags associated with the switch identifier are obtained from the switch table.

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20. The apparatus of claim 19, wherein the hash algorithm is configured to generate the index into the tag table by applying a hash function to select field data from a packet to generate a hash value, dividing the hash value by the total number of tags associated with a switch identifier, and then adding the start index.

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